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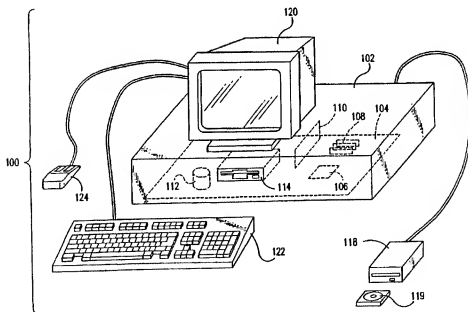
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(54) Title: **AUTOMATED SECURITIZATION SYSTEM**



(57) Abstract: A method and system (102) for managing risks is described in an electronic forum (see Fig. 1). By utilizing parameter matching, buyers and sellers of various risks (asset-backed securities, securitized revenue streams, insurance and combinations thereof) can establish an electronic market in which those risks can be exchanged as commodities. By creating options on those commodities, risks can be further managed.

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## AUTOMATED SECURITIZATION SYSTEM

BACKGROUND OF THE INVENTIONField of the Invention

The present invention is directed to a method and system for acquiring customizable securitizations, and more particularly, according to one embodiment, for acquiring a diversified set of securitizations designed to target a specified risk group.

Discussion of the Background

Presently, certain types of loans are transferred between lenders. For example, loans of a particular type (e.g., 30 year conforming loans) are originated by one lender and later purchased by another lender. Thus, there is an existing limited market for the re-sale of loans with a few number of parameters.

SUMMARY OF THE INVENTION

It is an object of the present invention to provide a method and system for customizing securitizations (e.g., for the purchase or refinancing of a home).

It is another object of the present invention to provide an electronic method and system for exchanging customized securitizations (e.g., for the purchase or refinancing of a home).

It is a further object of the present invention to provide a method and system for securitizing income streams (e.g., fees collected with some predictability).

It is yet a further object of the present invention to provide a method and system for producing customizable financial products based on user-specific financial criteria. Such products include, but are not limited to, customizable mortgages, trading accounts, bank products (e.g., loans and deposit accounts), and insurance.

BRIEF DESCRIPTION OF THE DRAWINGS

A more complete appreciation of the invention and many of the attendant advantages thereof will be readily obtained as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying drawings, wherein:

Figure 1 is a schematic illustration of a computer system according to one embodiment of the present invention;

Figure 2 is a screenshot of an exemplary interface for entering or viewing exemplary closing costs associated with a customizable loan;

Figure 3 is a screenshot of an exemplary interface for displaying a table of contents for use with entering data relating to a customizable loan;

Figure 4 is a screenshot of an exemplary interface for entering mortgage type and term information;

Figure 5 is a screenshot of an exemplary interface for entering property information;

Figure 6 is a screenshot of an exemplary interface for entering information about the borrower/co-borrower; and

Figure 7 is a screenshot of an exemplary blank summary report that is dynamically filled out and transmitted as a result of an attempt to qualify a loan.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawings, wherein like reference numerals designate identical or corresponding parts throughout the several views, Figure 1 is a schematic illustration of a computer system for providing customizable securitizations. A computer 100 implements the method of the present invention, wherein the computer housing 102 houses a motherboard 104 which contains a CPU 106, memory 108 (e.g., DRAM, ROM, EPROM, EEPROM, SRAM, SDRAM, and Flash RAM), and other optional special purpose logic devices (e.g., ASICs) or configurable logic devices (e.g., GAL and reprogrammable FPGA). The computer 100 also includes plural input devices, (e.g., a keyboard 122 and mouse 124), and a display card 110 for controlling monitor 120. In addition, the computer system 100 further includes a floppy disk drive 114; other removable media devices (e.g., compact disc 119, tape, and removable magneto-optical media (not shown)); and a hard disk 112, or other fixed, high density media drives, connected using an appropriate device bus (e.g., a SCSI bus, an Enhanced IDE bus, or a Ultra DMA bus). Also connected to the same device bus or another device bus, the computer 100 may additionally include a compact disc reader 118, a compact disc reader/writer unit (not shown) or a compact disc jukebox (not shown). Although compact disc 119 is shown in a CD caddy, the compact disc 119 can be inserted directly into CD-ROM drives which do not require caddies. In addition, a printer (not shown) also provides printed listings of customized risks and/or securities.

As stated above, the system includes at least one computer readable medium. Examples of computer readable media are compact discs 119, hard disks 112, floppy disks, tape, magneto-optical disks, PROMs (EPROM, EEPROM, Flash EPROM), DRAM, SRAM, SDRAM, etc. Stored on any one or on a combination of computer readable media, the present invention includes software for controlling both the hardware of the computer 100 and for enabling the computer 100 to interact with a human user. Such software may include, but is not limited to, device drivers, operating systems and user applications, such as development tools. Such computer readable media further includes the computer program product of the present invention for providing customizable risks and/or securities. The computer code devices of the present invention can be any interpreted or executable code mechanism, including but not limited to scripts, interpreters, dynamic link libraries, Java classes, and complete executable programs. Moreover, the computer code devices can be downloaded dynamically from a computer network adapter acting as an equivalent to a computer readable medium.

Generally, the present invention facilitates producing and administering loans across countries, languages, and currencies. Such a system enhances integrated online electronic network-based (e.g., Internet-based) promotion, origination, processing, evaluation, underwriting, verification, closing, validation, warehousing, bundling of asset-backed securities, marketing of the asset-backed securities, and final sale of asset-backed securities in the secondary marketplace to investors. The purchase of loans according to the present invention can be on a case-by-case basis or through the bulk purchase of an existing portfolio of loans (e.g., the system accepts (1) a single loan application to see if it qualifies or (2) a group loan application for the purchase of a group of loans from a portfolio at one time).

The present invention preferably connects plural computers via a wide area network (e.g., the Internet or a wireless network (RF or IR)). Using the network, financial institutions, their agents, or other providers of loans are able to (1) view loan products that are available and meet specified criteria, (2) pre-qualify for specific loan products, and (3) receive a real time loan quotes (e.g., including monthly payment, origination costs, inspection costs, appraisal costs, and other information such as one might find in a good faith estimate of closing costs). (Figure 2 provides an exemplary form interface for entering closing cost information. When querying such information, a web server queries a database that stores the real-time information and integrates the real-time information with the form interface to provide a quote. Exemplary embodiments of web servers utilize Active server pages or Java

server pages with database connectivity programming interfaces.) Moreover, the querying capability of the system can be incorporated into portal websites, bank websites, kiosks and other electronic distribution systems so that consumers also can directly enter their information and receive a real time approval for loan applications.

Generally, using the present invention in the context of asset-backed loans, users input data electronically into the system via a remote terminal (e.g., PC, cell phone, PDA) to see if their corresponding loan parameters qualify to have their loan purchased by the system. The first page of an exemplary data input system is shown in Figure 3. Although Figure 3 utilizes a Web interface, other interfaces may also be used. Information on providing data services over the Web is provided in the following references which are incorporated herein by reference: (1) Visual Studio Core Reference Set, by Microsoft Press, (2) Visual InterDev 6.0: Web Technologies Reference, by Microsoft Press, (3) Professional Active Server Pages 2.0 by Francis et al., published by WROX Press Ltd., (4) Oracle PL/SQL Programming by Scott Urman, Published: March 1996, (5) Hitchhikers Guide to Visual Basic and SQL Server: with CD-ROM, by William Vaughn, Published: May 1997, (6) Using Microsoft SQL Server 6.5 (Special Edition) by Stephen Wynkoop, Published: March 1997, and (7) Advanced PowerBuilder 6 Techniques by Ramesh Chandak. Moreover, since the present invention preferably utilizes access to information updated in multiple locations, a database preferably serves as the back-end of the web server providing information. Such a database can be any commercial database (e.g., Oracle8), but preferably includes a database supporting a high number of transactions per second. As an alternative to a database, a file-server with file locking may be used to store the information instead.

The operation of the present invention will now be provided in greater detail. Generally, the system contractually obligates the requestor to sell its loan. The obligation can be for (1) a single loan, (2) a completed portfolio, or (3) an open portfolio to be completed by a specified date. According to the third obligation, the present invention enables lenders to set forth a price and timeframe within which a buyer will purchase the loans that the seller originates. To facilitate loan transactions, it is preferable to use an electronic, real-time lock in of pricing, loan pool size, quality, and other data specifics. In order to help track the obligations, both the sellers and buyers have online access which allows them to know (preferably in real time) which percentage of the commitment has been reached. As would be appreciated by one of ordinary skill, the systems for creating obligations and tracking obligations need not be a single system but may be distributed among plural systems.

In order to identify participants in transactions, each participating financial institution is provided with a unique identifier. Moreover, separate unique identifiers are preferable for branch offices and distinct individuals within the institutions. Thus, an institution and its brokers and agents can be tracked for all their activities (e.g., the status of any and all information or loans they have entered into the system), and preferably includes tracking down to the keystroke/mouse-click level for greatest accountability. To enhance security, it is preferable that at least one level of passwords is used to authenticate institutions and brokers/agents. Agents/brokers also will have an online profile with the ability to interact with others through e-mail, instant messaging and chat. Those profiles allow users to have certain level of authorization and also have an overview of the training received, and automatic updates of when new training is necessary or when the person has not completed training and is not authorized to use a feature. For the import and export of data the system interfaces with available underwriting programs. The users can be verified through the use of digital certificates and digital Ids. Additionally, the user authentication is enabled to limit user access based upon the location from which a user is accessing the system (e.g., remotely through dial-up, through corporate intranet, etc.).

In order to facilitate transaction tracking, the present invention utilizes a unique identifier for each transaction (e.g., using a transaction number or code), as shown in Figure 4. This unique identifier can be generated either manually (which may be slow based on the necessity to be unique) or automatically as new loans are processed. In addition to the unique identifier, additionally tracked information includes, but is not limited to: institution name and unique identifier number, unique case number, borrower's full name, date of birth, government issued id number (social security number, cedula, or government issued unique personal identification number, etc.), loan type, credit report status and results, underwriting status, last time file was changed or update for all information, underwriting recommendation (e.g., level 1, level 2, level 3, ... level n, where each level represents a different risk level), underwriting date, and case creation date and by whom. The unique identifier can be used as a primary key into any of the tables that store information about the specified loan.

Each applicant is also assigned a unique applicant identifier number that enables them to be tracked over the life of their credit experience. This applicant identifier is also correlated with their credit report/history. Moreover, when common identifiers are used between risks, it is possible to learn more about the global risks of the applicant (e.g., his driving record from his car insurance, his payment history from his loan application, and

whether he uses direct deposit to reduce control income). Using this feature, it is possible to pre-populate data fields in forms from applicants that previously applied for a loan through the system. In an institution with multiple branches the system assigns subset numbers to each branch allowing the institutions to track productivity by branch, supervisor, and individual loan officer.

As discussed with reference to Figure 4 above, several options exist for assigning unique identifiers to fields, and users may specify the way that user-defined fields are generated. Users may select to start sequentially, use a proprietary system, or let the system automatically assign a number. When using sequential numbering, the system automatically assigns the next sequential number based on previous one assigned. Case numbers can be imported if desired from other directories/files, etc. Case files also include all the notes that are associated with a given case and/or file. Users can change/alter/delete/modify cases and files but security levels necessary are set by the user and an audit trail is generated by the system. Case Files may include (1) both standard and abridged versions and (2) a Case file summary window allowing user to see key data at a glance. The present invention further facilitates importing and exporting loan information, printing, modifying, sharing, and electronically sending files and deleting Loan Case Files within the system.

Financial Institutions set up their pricing rationale for loan products, and the system keeps it constantly updated in real time. For example, a party provides its formula for loan rates and calculation methods 2% over LIBOR etc., and the system automatically updates the benchmark rate (in this case Libor) and calculates the exact rate to be charged based on the formula entered. The rate is updated substantially every time the benchmark rate changed. The system allows different variables of pricing to be entered depending on the person applying for the loan. The system generates special parameters (e.g., rates or closing costs) depending on the individual applicant (for example, if the lender wanted to provide (1) a 25 basis point discount or (2) a closing cost discount for anyone who had an income over \$100,000 and lived in a certain area of town). Special parameters (e.g., rates or closing costs) could also be set up for brokers, agents, branches, etc.

The system further facilitates rate negotiation by allowing participants to request a lock on a rate, select a price for a rate lock, request a negotiated rate lock, and cancel a rate lock (e.g., for brokers working with a specific financial institution). For the import and export of data, the system interfaces with available underwriting programs. Specific



institutions may also modify their rules for pricing to allow real-time pricing exactly as the institution currently prices their loan products.

As discussed above with reference to Figure 2, the present invention allows settlement parameters (e.g., closing costs) to be negotiated as well. This enables buyers and sellers to have a complete picture of their respective responsibilities.

Much like a scoreboard, financial institutions, brokers, agents, consumers and others may see an electronic display of all the products and pricing. Consumers, brokers, agents, branches, etc. may also see information that is personalized for them through lenders such that each group sees a different set of pricing parameters. The Lenders may limit the information that any of the users have access to online regarding pricing, products, costs, etc.

The integrated underwriting process allows users to enter and save borrowers' information with automated validation of all information fields. As shown in Figure 3, the system walks the user through all the necessary tasks step-by-step. Each field is filled out with the aid of integrated real time help (e.g., by clicking on a word to receive a full explanation as to what needs to be entered in each field). Preferably, fully automated help is available including all underwriting guidelines, glossary, LTV, Amortization and payment schedules, automatic tip sheets, integrated local regulatory requirements, updates/new system features, and searchable full text based help, and video help with in language answers to common consumer questions. Preferably, the help is customized to the user's language of choice. The application itself contains all borrower information including personal data, work, credit, family background, type of loan, purpose of loan, exact specifications as to product to be secured by the loan, origin of product and all other details that may be pertinent to the process. Additional exemplary application data is shown in Appendix I.

By presenting the information to the automated underwriting system the user gets a response as to whether the loan meets the underwriting criteria. The underwriting system makes automatic calculations based on all the data points listed on the Loan Application to determine whether it meets the specified criteria. The system also determines if the loans comply with local government agencies' loan programs or other requirements for them to be accepted.

The underwriting technology also includes worksheets that allow the user to make exact calculations for the various data points that need to be entered and automatically sums up or delivers the solution. The automated underwriting system dynamically generates and

displays the next fields and windows to be completed depending on the previously entered information.

Each of the individual processes (e.g., the underwriting process or the application completion process) described herein can be completed in one time or can be saved and started again with the state of the art process being stored and accessible by name, unique case number or other data field. This allows the underwriter or user to finish the process in the data field and location where the user left off. The state of the process may also be archived for future retrieval by the financial institution or the consumer soliciting their loan, forming a virtual storage place for their credit information including loan application, credit report, appraisal information, loan documentation, and all other applicable loan related information. This information may be retrieved via a remote terminal (e.g., cell phone, PDA or other electronic devices across a wide area network). The data is automatically saved in the system (back up times will vary and will have the ability to be adjusted), but the user can also save in a manual fashion.

Before a user can submit a loan to see if it qualifies with the system's criteria, the system automatically checks all documents and data fields to ensure that they are complete. Such checking can be performed using client-side scripting (e.g., using Javascript). If the data fields, documentation or any other item is not complete, the system automatically identifies which areas are incomplete and brings the user directly to the section(s) that need to be completed so the user can enter the information directly. The system validates that all information is present and has an automated check sheet prior to processing the request for qualification under the system. Moreover, the actual values can undergo domain checking (e.g., to ensure that dates, telephone numbers, postal codes, etc. are entered in their proper formats and within valid ranges). The system allows the user to automatically calculate front and back end ratios, LTV, credit score, and merged credit report coupled with other information to arrive at an underwriting decision. The system utilizes security protocols to assure that the person is authorized to conduct the transaction.

As shown in Figure 3, online forms allow users to enter and save borrowers information with automated validation of all information fields. The system steps the user through all the necessary tasks and areas to fill out the forms and provides integrated, fully automated, real time help functionality (e.g., by clicking on any word etc. to receive a full explanation as to what needs to be entered in each field). The help system includes all underwriting guidelines, glossary LTV, Amortization and payment schedules, automatic tip

sheets, integrated local regulatory requirements, updates/new system features, and searchable full text based help, and video help all localized to the consumers language of choice. The application itself will contain all borrower information including personal data, work, credit, family background, type of loan, purpose of loan, exact specifications as to product to be secured by the loan, origin of product and all other details that may be pertinent to the process.

During the application, the user is told what percentage of the overall application they have completed and how much additional time is estimated to complete the application.

The application includes worksheets that allow the user to make exact calculations for the various data points that need to be entered and automatically sums up or delivers the solution. The automated loan underwriting system automatically generates and displays the next fields and windows to be completed depending on the previously entered information.

The system also determines whether the abridged version application forms may be used and provides the ability to enter, save, manipulate, and query borrowers information with automated validation of all information fields. The abridged versions use less data points then the traditional and full system and provide the potential for speedier decision making. The system provides a step by step system aiding people to determine whether the client qualifies for an abridged application as well as explaining all documentation necessary for any type of application.

The present invention provides an affordability analysis that determines whether, based on the current criteria, the consumer has the capacity to repay the loan and automatically calculates from the data points on the loan application whether the applicant is qualified. The loan analysis system analyzes the loan, borrower, secured property data of all loans entered and generates automated responses, makes suggestions, recommendations, approval, denial, approval conditions necessary, calculations, and statistics regarding the specific loan and the ability for it to be sold for securitization, and generally whether the loan meets established criteria for acceptance. The system and reports also provide detailed information as to further information needed and automates the process that (1) takes the lender step by step through what must be asked and/or confirmed to receive a definitive answer or (2) legal and/or other documentation needed in the case of a denial.

The present invention also provides an automated way for the user to acknowledge all the representations, conditions and warranties necessary for the system to process, verify, and provide a response to the query and use the system.

The system establishes the specific requirements needed for income and employment verification. If done manually this will detail what must be done and specific documents and processing needed. The system will also have the ability to electronically check and reconcile the information on income and employment provided on the loan application through automated interfaces with other database systems. (For example, the system can connect via OFX, IFX, FIX, XML, etc. to verify account numbers and balances automatically for both assets and liabilities.) This provides full online and electronic verification and processing. The system is also designed to allow for immediate and electronic data exchange with employers directly to perform information validation with the employers.

The system establishes the specific requirements needed for asset processing and verification. If done manually this will detail what must be done and specific documents and processing needed. The system will also have the ability to electronically check and reconcile the information on assets provided on the loan application. This would provide for the full online and electronic verification and processing.

The system allows for the electronic integration into the credit agencies and internal banks systems, or other repositories or databases of credit information, so that user can request, reissue, or print and review a credit report. Merged credit reports from a variety of credit reporting agencies will also be available. The system will also automatically bill the user for credit reports issued and the user will have to confirm that they want to proceed with this feature prior to execution of this item. Credit reports can be ordered automatically after providing the data necessary in the application (the user will also be able to get credit reports issued on a stand alone basis as well if they desire). The user will be able to maintain their current username and pin number of the Credit agency. If you already have a printed report from the credit agency you can put in your report number and the system will merge electronically that information to avoid re- entering data. The system also includes the ability to receive multiple credit reports simultaneously and merge them for joint or co-signed applications. The system has the ability to forward electronically or make accessible via electronic means to the consumer the results of their credit report. Additionally, the system is able to pre-populate credit report data into all applicable aspects of the application, and other pertinent areas where the data is required. The ability for the credit report data to be pre populated into all applicable aspects of the application, and other pertinent areas where the data is required. The system will also alert the user as to the status of the credit report whether it is in process, complete, not requested, or there was an error with the system. From

the credit report itself, there will be access to click on specific items to get a detailed account of what the specific incident was or specific spending or repayment activity detail was including the ability to order other reports or an automated means by which one can make contacts electronically or via other means to the individuals listed to get more details or confirm the activity. Users will also have the ability to search the different data points contained in the credit report, and demographic data may be collected and analyzed to more precisely identify risk. The system allows users to enter a full credit application and receive an automated response indicating the underwriting recommendation (e.g., level 1, level 2, level 3, ... level n, where each level represents a different risk level).

The system will have the ability to determine when items from the application and the credit report match (for example if the liability balance matches but the account number is off by one digit will be able to make a suggestion to verify as this is likely an error of data entry). As the system can automatically match liabilities entered in the loan application to the credit report it will also provide the ability to unmatch these items if so desired. The user of the system can also opt to omit liabilities on the credit report if so desired (i.e. in the event a debt is duplicated or doesn't belong to borrower). The user will also have the ability to delete completely liabilities from the system if so desired.

The system provides the ability to automatically reconcile liabilities and real estate owned, match and unmatch liabilities, omit include and copy liabilities, delete, edit, and otherwise alter or indicate a liability that will be paid by closing. This ability will be an automated function of the system allowing the information from any source to be automatically reconciled with the information already entered into the application and will also allow the user to edit, change, copy and modify this information if desired. The system will also highlight matched and unmatched items of liability from real estate owned and provide a total for all items. The system will have the ability to determine when items from the application and the real estate owned or other credits match (for example if the address on a property owned matches but the street number is off by one digit will be able to make a suggestion to verify as this is likely an error of data entry). As the system can automatically match other credits, etc. entered in the loan application to the credit report and the electronic asset verification mechanism, it will also provide the ability to unmatch these items if so desired. The user of the system can also opt to omit other credits, etc. on the credit report if so desired (i.e. in the event the item is duplicated or doesn't belong to borrower). The user will also have the ability to delete completely other credits, etc. from the system if so desired.

The system automatically notifies an appraiser to visit a property to conduct an appraisal and indicate what level of report he must produce. The appraiser will have the ability to fill out the appraisal report and submit the documentation online. This section will also have an online help section to guide appraisers through the process. Appraisers can fill out appraisal forms via PDA, cell phone, pager, or other wireless device to quickly and electronically update the appraisal portion of the process to the system.

Lenders and consumers will also be able to automatically track the status of this process online and upon completion have stored an electronic version of the appraisal report for their review/access. Some of the areas that the appraisers will cover online include: Appraisal and documentation requirements, Appraisal Reports, Property Documentation guidelines, Exterior only property inspections, Sales comparison analysis, Standards of Professional Appraisal Practice, Required exhibits, and Approved companies for Appraisal and automatic notification.

The system automates the online appraisal system which allows full integration to the abridged format may be appropriate whereby appraisal is not necessary. The automatic appraisal process can also be skipped, in the event that the appraisal needs to be done in a paper based fashion. This allows for inherent flexibility in the system.

During the processing by the system the user will be able to track the status of the loan-processing request in real time and be informed when there is a response. Processing can be done in batch mode or on a case-by-case basis. The system will further integrate electronic request, approval and issuance of title insurance, flood insurance, mortgage insurance, notarize, pay property taxes, transfer title documentation, register and verify the title information, and appraisal of the property on which the loan is taken.

Additionally, the system incorporates advanced notification mechanisms to alert all individuals in the process of status changes through email, instant messaging, paging, wireless devices, and other devices. Lenders using the system as their originating system internally are able to mark whether loans are for securitization or will be held by the financial institution.

The system will also have the automated ability to refer loans to other parties based on criteria entered (for example, if a potential borrower does not qualify for the loan with one specific lender but the system recognizes this person would qualify for the loan with another lender, they are referred directly to the lender with which they would qualify to get the loan.)

Underwriting Reports may include at least any of the following: Underwriting Findings Report, Credit Summary Report, Credit Report minor derogatory credit table, Balance summary from underwriting analysis, Credit Report Major derogatory credit, Underwriting Analysis Report (e.g., housing and total expense ratio calculations).

The system allows users to enter a full credit application and receive an automated response underwriting recommendation (e.g., level 1, level 2, level 3, ... level n, where each level represents a different risk level).

The system may automatically send by email/fax/or regular mail all necessary documentation or information to complete the process (i.e. additional documentation needed) or to respond with the definitive decision. In the case of a denial the system will have the option to automatically send by email/fax/or regular mail all necessary documentation to comply with local legal requirements. The information included with any decision will be underwriting findings including recommendations and next steps. Brokers will be able to transmit directly to the financial institution or to the system for approval, where the system will process and signal whether a loan will be purchased and secondly whether the loan meets the acceptable profile for the financial institution (complies with the guidelines established for purchase between the system and the financial institution). The decisions generated by the system can be sent via email, phone PDA, or other devices. This notification can be made simultaneously to any of the parties involved in the process (e.g., broker, consumer, etc.). Notification can be available via email alert or WAP-enabled cellular phone or other such device. Access to system will be possible via PDA, PC, cellular phone, etc. Information that is emailed, uploaded, faxed, or entered is all stored and uniquely related to one another, combining to automatically form a unified view of the application and all the associated documentation.

Quality Control and Post Purchase Reviews include specifying Quality control requirements and Post purchase review procedures.

Upon receiving an application the system will be able to automatically assign the level of credit enhancement needed and have both manual and electronic interfaces with providers of credit enhancement.

The users of the system will be able to automatically put together loans in tranches to create customized tranches of asset backed securities or will be able to purchase pre developed packages. Importantly, the grouping need not be based on a single country, language, currency or set of risk factors. Conversion factors (e.g., currency conversions) and

translation engines facilitate this multi-parameter interaction. In fact, by specifying varying parameters, it is possible to establish a diversified loan portfolio that spreads the risks associated with any one type of instrument.

Users will have the ability to buy, sell, trade, arbitrage all asset-backed securities electronically through the system. The ability to track the usage of the system by any data point in an application, data entry personnel, bank, loan type, etc. Financial institutions or purchasers of the asset backed securities will be able to set up an online profile as to the assets they wish to purchase (being able to specify down to the data point level) and the system will automatically assemble loans in personalized tranches meeting investor requirements.

Purchasers will be able to get automatic alerts as to when a certain class, type or security is available. The system will also automatically inform a user of changes in the status of the underlying securities via electronic means (email, pager, WAP-enabled cell phone, PDA, etc.). In the online marketplace to buy the securities buyers will be able to drill down from the highest level all the way to the case level and design their own tranches and see all the information captured by the system. The system also provides the ability for investors to track how they are doing based on their goals.

Each person who enters information into the system will have an online profile the ability to interact with others through instant messaging and chat. These profiles will allow users to have certain level of authorization and also have an overview of the training received, and automatic updates of when new training is necessary or when the person has not completed training and is not authorized to use a feature.

Users will have the ability to see online their access to additional capital and percentage of the funds that have already been used based on the contracts. The system will also allow for the automatic notification of procedures that need to be undertaken.

The system also provides the ability to create customized asset backed securities by picking specific tranches to diversify risk (e.g., country, location in country, borrower profile, credit score, specific type of asset backed security, currency etc...) and offers the ability to make changes in real time.

Users will have access to chat, instant messenger and others for customer support, their own brokers, agents, or branches or with end consumers. Automated notification of packages that meet the specified criteria of the investor. This notification is either by email, pager, cell phone, instant message, or any other device.



The system will allow for the real time transfer of funds to cover the purchase of the asset-backed securities. The ability to make and convert all the exchanges in the system at a percentage of the "rate of the day" facilitates collection of fees on each transaction.

The system automatically bills and debits electronically for all use of the system on a monthly basis by all financial institutions.

The system monitors the status of the loans in that all purchasers or users will be able to view an individual loan to see if it is up to date and will have a system whereby the current status of a loan can be viewed by the debtor, loan issuer, or purchaser of the loan as part of an asset backed security.

As discussed above, passwords provide at least one level of authentication in the system. All security protocols to stop people from accessing certain information and the ability to limit the information to which anyone client can access information down to the data point level. All data is stored electronically in the secure server farm. Security and authentication mechanisms include: SSL, Secure ID, Digital Certificates, Digital Ids, virtual private network (VPN) connections, IP/Subnet level monitoring, authentication and blocking, etc.

The automated system generates reports and query functionality along any of the entered parameters or determination characteristics. The system automatically generates a report as to a timeline on when things should be completed for the consumer to understand the logical timeframes. These reports will be automatically generated based on loan type, whether it will be abridged or standard, and industries processing time history.

The system also offers the ability for consumers and businesses to query the database of user profiles in the system. This allows searching capabilities on any of the data points in the consumer data, electronic loan application, payment history, or any other data points stored in the system, as well as drill down to the next level of detail for each of these items. The system will also be allowed to be accessed directly by consumers so that the financial institutions can use this as their mortgage originator on their Internet or electronic sites, including desktops, call centers, etc.

Detailed reports are available illustrating usage, patterns, etc. by user, loan, and all other specifications. Graphing and summary views as well as detailed transaction based views are available. Additionally, the reporting functions allow for the determination of where the process is slowing, and provide a tool to increase efficiency.

All electronic loan applications by loan officer, branch, or institution can be viewed, sorted, and manipulated. After the process is completed the user will be able to access the results, print the results, and at a future date access all the information or analyze the information and generate reports via electronic and automated means. Results will be available in both summary and detailed formats. The reports and results will also include explanations, findings, verification messages or approval conditions, and observations. These items will be available for each portion of the items entered into the application.

The system provides a variety of notification and access mechanisms including, but not limited to, PC, email, phone, PDA, WAP enabled device, etc.

Although asset-backed securities include real estate backed securities, other types of assets (e.g., vehicles and other products bought on credit) may also function as the security for loans. Similar to the real estate description process, the assets would be described electronically so that the purchaser would be able to understand the asset, its condition, its use, etc. Moreover, the system of the present invention may include video images of the asset that is securing a loan.

In addition to exchanging rights to securitized loans or asset-backed securities, the rights to the servicing of such loans/securities may also be exchanged. Similar to the forms created and filled out to express the parameters of interest to a purchaser of a securitized loan, parameters specific to the servicing of the loan would be described in an on-line system to facilitate service contract buyers finding service contract sellers.

Generally, the present invention can be utilized to customize risk management. Although traditional securitized loans are for standard rates and standard terms, according to the present invention, unique rates, terms, prices and financial instruments generally can be created. The system creates the ability to search "by feature" or "by parameter" to find risks that match the specified feature(s) or parameter(s). To facilitate this, a price matrix may be created reflecting relevant attributes (e.g., cash flow, including fixed or adjustable, term, rate, and margin where applicable) as well as domain specific features (e.g., LTV, occupancy, property type and loan size for real estate).

Moreover, using historical data (e.g., past default rates or accident rates), the system can help a user (buyer or seller) to determine a risk and a value for each asset being purchased. Preferably the system learns with data from those people in the field already. For example, as part of a due diligence in transferring a risk from a seller to a buyer, the buyer will receive historical data that can then be input into the system. Overall the risks may be

scored and normalized using a variety of factors (e.g., risk for the given industry, or recent risk versus long-term risk).

As described above briefly, another type of asset that may be securitized is revenue stream. Below are exemplary revenue streams, broken down into loose classifications, but any other revenue stream (or risk source) can be securitized accordingly. Preferably the payments being securitized are regular or semi-regular, but more infrequent payment sources may be modeled as more risky investments. The examples include (domestic and/or international) revenue streams coming from each of:

- (1) Consumer or corporate income streams including salaries, accounts receivable, credit card balances;
- (2) Real estate revenue including rent and lease payments, condo and home owner association fees;
- (3) Utility fees including power, cable, gas, phone, water, garbage collection, recycling, and lawn services;
- (4) Telecommunications fees including ISPs, cell phones, and long distance;
- (5) Licensing / branding royalties including syndication fees, corporation licensing fees, IP licensing streams (e.g., for sub-licensing the right to use a name or image), recording contracts, advertising streams, movies;
- (6) Government revenue collection including taxes (sales or income), air waves sales, post office fees, DMV fees, Patent Office fees, excise taxes, immigration fees, alcoholic beverages, cigarettes, gambling, tolls, state sponsored gambling (e.g., lottery tickets, Keno, etc.);
- (7) Professional license fees including state bar or medical licensing fees;
- (8) Association fees including union dues and membership (e.g., ABA membership)
- (9) Subscription fees including those for magazines, newspapers, and on-line data services (e.g., Lexis / Nexis and Reuters)
- (10) Corporate revenue including sales of products at sporting events and in the fields of aerospace, petrochemical, refining, pipeline, agriculture; defense contract; gas delivery (e.g., to airlines) contracts;
- (11) Drug industry reimbursement including licensing fees to cover R/D costs
- (12) Service industry fees including legal, tax, travel agent, broker fees (personal or online), airline, restaurant fees, ATM fees, credit reports, law suit judgments, authorized reseller fee; and

- (13) Retirement payments including social security, Medicare/medicaid or other health insurance payouts and life insurance pay outs.

Multi-national monetary streams may also be possible using international payment streams (e.g., Visa / Mastercard fees and payments). Such streams would have added risks due to currency valuation changes but may have the added benefit of diversifying the risk over plural currencies that may fluctuate at different rates.

Based on the specifics of any one securitized revenue stream, an alternate term (e.g., yield or up-front payment) may be provided to the source of the securitized stream. For example, a known credit risk receiving a payment for social security payments may receive a higher yield than an unknown person whose risk is determined strictly on demographics. This creates a customized per-product, per-person quote using dynamic pricing.

Similar to the asset-backed securities above, risk analysis may include many factors in revenue securitization. The system receives all factors known about a risk (e.g., revenue streams historically, geography, market position, market share, management, patents, trademarks, cash, income streams, years in operation, historical growth, and P/E) and provides those to potential investors as displayable or searchable quantities.

The present invention also includes selling risk in the form of an existing or soon to be issued insurance policy. The risk to be insured (e.g., a person via health insurance or a doctor via medical malpractice insurance) is described as a series of risk factors (e.g., a time remaining on the policy, number of claims to date) as illustrated above. The purchaser would then be able to review those parameters and filter out (manually or automatically) those risks that do not correspond to the intended risk.

Moreover, the system may generate portfolios of risk where more than one type of security and/or security type are included within the portfolio. For instance the user may specify that it is buying or selling a portfolio using a direct percentage basis (50% asset type<sub>1</sub> and 50% asset type<sub>2</sub>). Asset allocations may also be set as relative percentages (10% of the amount of asset type<sub>1</sub> that can be bought should be bought as 50% asset type<sub>2</sub>). The allocations may also be set recursively (50% securitized loan (where 50% is domestic and 50% is international), 50% revenue stream (where 50% is international, tax-based, 25% is entertainment-based and 25% is (50% health insurance and 50% malpractice insurance))).

The above description has been provided as if the purchaser is going to either pay all the money himself/herself or assume all the risk in a portfolio himself/herself. In an alternate embodiment, the purchaser may specify the number of other purchasers with whom he/she is

willing to share the risk. Since there is a risk that the other purchasers may not be able to pay there portion, the risk worthiness of the other purchasers may either be specified like a risk parameter or left as a wildcard.

In essence, each of the above type of securities act as a negotiable security commodity (hereinafter referred to as a "Keough note") that can be traded based on its risk factors. The seller describes the Keough note (i.e., the actual risk) that he/she is trying to sell, and it is matched with a virtual risk that represents the Keough note that the buyer wishes to buy. In order to further offset the risk of Keough notes, participants may also buy and sell options on Keough notes. Just as the risk parameters were specified for the notes themselves, so they would be specified for the options. In addition, the various strike prices would be established at which the buyer could exercise the options. In this way, a buyer of one risk portfolio could hedge his/her risk by buying an option on an alternate (e.g., opposite) position.

Obviously, numerous modifications and variations of the present invention are possible in light of the above teachings. It is therefore to be understood that, within the scope of the appended claims, the invention may be practiced otherwise than as specifically described herein.

## Appendix I

Section IV. Employment Information

Current employer name

Self-employed indicator

Employer street

Employer city

Employer state

Employer Postal Code

Hire Date

Years in this line of work

Position/title

Business phone

Former employer name

Self-employed indicator

Former employer city

Former employer street

Former employer state

Former employer Postal Code

Former employer Postal Code + 4- Postal Code?

Former employment from date

Former employment to date

Monthly income amount

Position/title

Business phone

Current employment indicator

Section V. Monthly Income and Combined Housing Expense Information

Base employment income

Overtime income

Bonus income

Commission income

Dividend/interest income

Net rental income  
Subj Net cash flow  
Other income type  
Monthly income amount  
Present rent  
Present first P&I  
Present second P&I  
Present hazard insurance  
Present real estate taxes  
Present mortgage insurance  
Present HOA dues  
Other expense  
Total present housing payment (4)  
Proposed first P&I  
Proposed second P&I  
Proposed hazard insurance  
Proposed real estate taxes  
Proposed mortgage insurance  
Proposed HOA dues  
Proposed other expense  
Total proposed housing payment (5)  
Condo/Association Fees

Section VI. Asset

Jointly/not jointly

Cash deposit held by

Institution name

Institution street

Institution city

Institution state

Institution Postal Code

Institution Postal Code + 4

Asset type

Account number

Market value

Number of shares indicator

Stock/bond description

*If type is automobile:*

Auto description

*If type is life insurance:*

Life insurance face value

Description if type is other

Section VI. Liabilities

Name of creditor

Creditor street address

Creditor city

Creditor state

Creditor Postal Code

Creditor Postal Code + 4

Type of liability

Account number

Payment

Balance

Number of months

Satisfied by sale/refinance indicator



Recipient of alimony/child support (receiver name and \$ amount)

Job related expense information

Section VI. Real Estate Owned

Property street address

Property city

Property state

Property Postal Code

Property Postal Code + 4

Plans for REO

Property type

Market value

Amount of mortgages/lines

Gross rental income

Mortgage payment

Insurance, maintenance, taxes, misc.

Net rental income

Subject property indicator

Current residence indicator

Section VII. Details of Transactions

Purchase price

Alterations, improvements, repairs

Land

Refinance

Estimated prepaid

Estimated closing costs

PMI, MIP, funding fee

Discount (borrower paid)

Total costs

Subordinate financing

Seller paid costs

Total other credits

Financed MI

Total loan amount  
 Cash from/to borrower  
 Other credit text  
 Other credit amount

Section VIII. Declarations

Declaration type  
 Yes/No  
 Explanation  
 Type of property owned  
 How title held code

Section IX. Acknowledgment

Borrower signature  
 Borrower signature date

Section X. Information for Government Monitoring Purposes

Do not wish to furnish Race/national origin  
 Other text  
 Sex  
 How application taken code  
 Interviewer name  
 Interviewer date  
 Interviewer phone number  
 Interviewer employer street address  
 Street address 2  
 Interviewer employer city  
 Interviewer employer state  
 Interviewer employer Postal Code  
 Interviewer employer Postal Code + 4

## Appendix II

## Quantitative Analysis Appraisal Report

## Subject

Property Address

City

State

Postal Code

Legal Description

County

Assessor's Parcel No.

Tax Year

R.E. Taxes \$

Special Assessments \$

Borrower

Current Owner

Occupant (Owner, Tenant, Vacant)

Neighborhood or Project Name

Project Type (PUD, Condominium)

HOA\$ /Mo.

Sales Price \$

Date of Sale

Description/\$ amount of loan charges/concessions to be paid by seller

Property rights appraised, fee simple, leasehold

Map Reference

Census Tract

## Neighborhood

Location (urban, suburban, rural)

Built up (over 75%, 25-75%, under 25%)

Growth rate (rapid, stable, slow)

Property values (increasing, stable, declining)

Demand/supply (shortage, in balance, over supply)

Marketing time (under 3 mos., 3-6 mos., over 6 mos.)

Single family housing

Price \$ (000) Age (yrs) – Low, High, Predominant

Condominium

Price \$ (000) if applicable Age (yrs) – Low, High, Predominant

Neighborhood boundaries

#### Site

Dimensions

Site area

Shape

Specific zoning classification and description

Zoning compliance (legal, legal [nonconforming-Grandfathered use], illegal [attach description], no zoning)

Highest and best use of subject property as improved [or as proposed per plans and applications] (present use, other use-attach description)

Utilities (public, other)

Electricity

Gas

Water

Sanitary sewer

Off-site improvements (public, private)

Street

Alley

Are there any apparent adverse site conditions (easements, encroachments, special assessments, slide areas, etc?) yes, no—if yes, attach description

#### Improvements

Source(s) used for physical characteristics of property (interior and exterior inspection, exterior inspection from street, previous appraisal files, MLS, assessment and tax records, prior inspection, property owner, other)

No. of stories

Type (Det./Att.)

Exterior Walls

Roof Surface

Manufactured Housing (yes, no)

Does the property generally conform to the neighborhood in terms of style, condition, and construction materials? (yes, no-attach description)

Are there any apparent physical deficiencies or conditions that would affect the soundness or structural integrity of the improvements or the livability of the property? (yes-attach description, no)

Are there any apparent adverse environmental conditions (hazardous wastes, toxic substances, etc.) present in the improvements, on the site, or in the immediate vicinity of the subject property? (yes-attach description, no)

#### Quantitative Sales Comparison Analysis

Address

Proximity to Subject

Sales Price

Price/Gross Liv. Area

Data & Verification Sources

#### VALUE ADJUSTMENTS

Sales or Financing Concessions

Date of Sale/Time

Location

Site

View

Design (Style)

Actual Age (yrs.)

Condition

Above Grade

Room Count

Gross Living Area

Basement & Finished

Rooms Below Grade

Garage/Carport

Net Adj.

Adjusted Sales Price of Comparables

Date of Prior Sale

Price of Prior Sale

Appraisal is made (as is, subject to completion per plans and specifications on the basis of a hypothetical condition that the improvements have been completed, subject to the following repairs, alterations or conditions)

#### PUD

Project information for PUDs (if applicable) – Is the developer/builder in control of the Home Owners' Association (HOA)? (yes, no)

Total number of phases

Total number of units

Total number of units sold

Total number of units rented

Total number of units for sale

Data Source(s)

Was the project created by the conversion of existing buildings into a PUD? (yes, no-give date of conversion)

Does the project contain any multi-dwelling units? (yes, no-data source)

Are the common elements completed? (yes, no-describe status of completion)

Are any common elements leased to or by the HOA? (yes-give description, no\_

Describe common elements and recreational facilities

#### Condominium

Project Information for Condominiums (if applicable)—Is the developer/builder in control of the HOA? (yes, no)

Total number of phases

Total number of units

Total number of units sold

Total number of units rented

Total number of units for sale

Data Source(s)

Was the project created by the conversion of existing buildings into a condominium? (yes-give date of conversion, no)

Project type (primary residence, second home or recreational, row or townhouse, garden, midrise, highrise)

Condition of the project, quality of construction, etc.)

Are the common elements completed? (yes, no-describe status)

Are any common elements leased to or by the HOA? (yes, no-give description)

Describe common elements and recreation facilities

CLAIMS:

1. A computer program product, comprising:  
a computer storage medium and a computer program code mechanism embedded in the computer storage medium for managing risks, the computer program code mechanism comprising:  
a first computer code device configured to accept a specification of an actual risk as a first series of plural electronically searchable risk parameters;  
a second computer code device configured to accept a specification of a virtual risk as a second series of plural electronically searchable risk parameters; and  
a third computer code device configured to match the first and second series of plural electronically searchable risk parameters.
2. The computer program product as claimed in claim 1, wherein the actual risk comprises an asset-backed security.
3. The computer program product as claimed in claim 1, wherein the asset-backed security comprises a mortgage.
4. The computer program product as claimed in claim 1, wherein the actual risk comprises a securitized revenue stream.
5. The computer program product as claimed in claim 1, wherein the first and second series of plural electronically searchable risk parameters comprise parameters for plural currencies.
6. The computer program product as claimed in claim 1, further comprising a fourth computer code device configured to accept a specification of a price for transfer of the actual risk.
7. The computer program product as claimed in claim 1, further comprising a fourth computer code device configured to accept a specification of a price for transfer of an option on the virtual risk.
8. The computer program product as claimed in claim 1, wherein the first and second series of plural electronically searchable risk parameters each comprise parameters for plural risks in a portfolio.
9. The computer program product as claimed in claim 1, wherein the first and second series of plural electronically searchable risk parameters each comprise parameters for plural risks in a portfolio specified by percentage.



10. The computer program product as claimed in claim 1, wherein the first and second series of plural electronically searchable risk parameters each comprise parameters for plural risks in a portfolio specified by an amount of risk.

11. The computer program product as claimed in claim 1, wherein the first and second series of plural electronically searchable risk parameters each comprise parameters for plural risks in a portfolio specified by historical data.

12. The computer program product as claimed in claim 1, wherein third computer code device comprises a fourth computer code device configured to search for at least one of the first and second series of plural electronically searchable risk parameters in a database.

13. A computer-implemented method of generating a diversified risk portfolio, comprising:

- accepting from a seller a specification of an actual risk as a first series of plural electronically searchable risk parameters;

- accepting from a buyer a specification of a virtual risk as a second series of plural electronically searchable risk parameters; and

- matching the first and second series of plural electronically searchable risk parameters in an interactive electronic environment.

14. The method as claimed in claim 13, further comprising transferring payment from the buyer to the seller substantially contemporaneously with, from the seller to the buyer, (1) a title document and (2) title of the actual risk.

15. A title document produced according to the steps of claim 14.

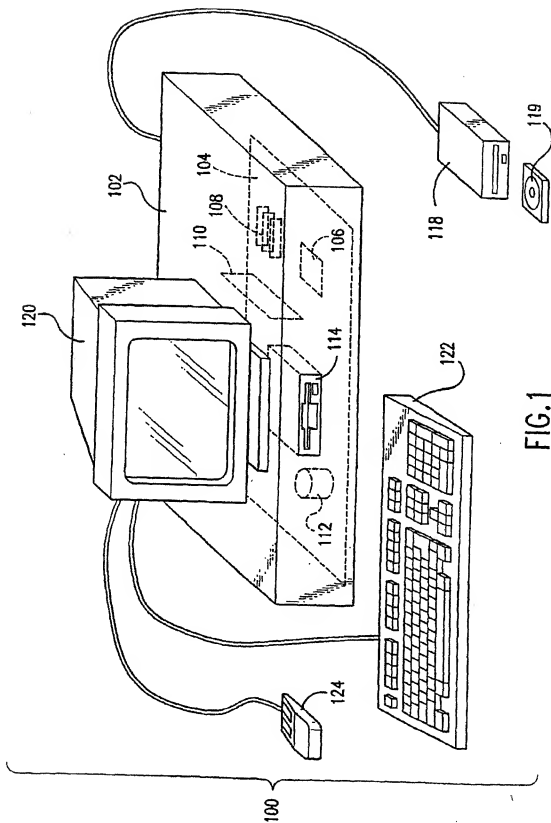
16. An electronic title document produced according to the steps of claim 14.

17. A risk management system, comprising:

- means for accepting a specification of an actual risk as a first series of plural electronically searchable risk parameters;

- means for accepting a specification of a virtual risk as a second series of plural electronically searchable risk parameters; and

- means for matching the first and second series of plural electronically searchable risk parameters in an interactive electronic environment.



Closing Costs Worksheet - Microsoft Excel spreadsheet provided by NAB

### Closing Costs Worksheet

Sales/Broker's Commission	
Items Payable in Connection with Loan	
Loan Origination	
Loan Discount	
Appraisal Fee	
Credit Report Fee	
Lender's Inspection Fee	
Mortgage Insurance Application Fee	
Assumption Fee	
Mortgage Broker Fee	
Items Required by Lender to Be Paid in Advance	
Interest	
Mortgage Insurance Premium	
Hazard Insurance Premium	
Flood Insurance	
Escrow Account Deposit	
Title Charges	
Settlement or Closing Fee	
Abstract of Title Search, Title Examination, Title Insurance Binder	
Document Preparation	
Notary Fee	
Attorney's Fees	
Title Insurance	
Lender's Title Insurance	
Owner's (Owner's) Title Insurance	
Government Recording and Transfer Charges	
Survey	
Real and Other Inspections	
Lead-Based Paint Inspections	
Total	\$

Print

Fig. 2

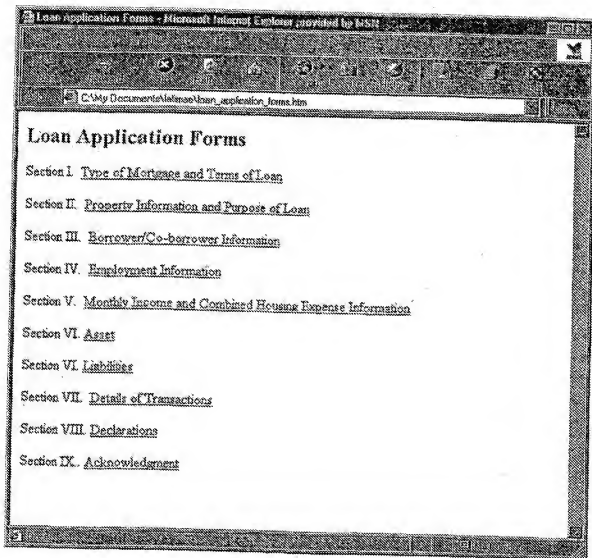


Fig. 3

Type of Mortgage and Terms of Loan - Microsoft Internet Explorer

File Edit View Favorites Tools Help

http://www.fhfa.gov/...

### Type of Mortgage and Terms of Loan

Unique Identifier

Agency case number

Lender case number

Mortgage type applied for

Original loan amount

Interest rate

Number of months

Amortization type

Product/ARM type text

Explanation text

Fig. 4

Property Information and Purpose of Loan

Subject property street address

Property city

Property state

Property zip (5) - Postal Code

Property zip + 4 - Postal Code

Number of units

Legal description type

Mortgage/second/other description

Year built

Purpose of loan

Other purpose explanation text

Occupancy type

Manner in which title held

Estate held

Title owner text

Construction:

Year lot acquired

Original cost

Amount existing loan

Present value of lot

Cost of improvements

Refinance?

Year required

Original cost

Amount existing loan

Purpose of refinancing

Describe improvements

Improvements made to be made

Cost of improvements

Sources of funds:

Source of funds type

Source of funds amount

Source of funds explanation

REMARKS

Fig. 5

Microsoft Internet Explorer 5.0 (Service Pack 4) - http://www.microsoft.com/...  
C:\My Documents\Internet Explorer\...  
Borrower/Co-borrower information

Social Security numbers	
Borrower first name	
Borrower middle name	
Borrower last name	
Borrower generation	
Home phone number	
Age	
Years of school	
Marital status	Married
Number of dependents	
Age of dependents	
Borrower current street	
Borrower current city	
Borrower current state	
Borrower zip + 4 - Postal Code?	
Ownership	
Number of years at current residence - Move in date?	
Months at residence	
Borrower previous street	
Borrower previous city	
Borrower previous state	
Borrower previous zip	
Borrower previous zip + 4 - Postal Code?	
Borrower previous ownership	
Borrower previous number of years - Move in date and move-out date?	
Borrower previous number of months	

Microsoft Internet Explorer 5.0 (Service Pack 4)

Fig. 6

Transmitted Information - Transmittal Information - Transmittal Information

Transmittal Summary Information

Form 1008 field (1)

Loan type

Buydown indicator

Buydown rate

Start-up indicator

Balloon indicator

Balloon term

Owner existing mortgage (refinance)

Appraised value (refinance - property value)

Subordinate lien payoff

Home equity payoff

Seller provided below market financing

Payment frequency

Property type

Project classification

ARM index value

ARM index margin

ARM qualifying rate

Community Lending Information (1)

Property state

MSA or county

Community Lending product

FamilNeighborhoods eligible

Community Seconds

HUD Area Median Income

Income link adjustment factor

Transmittal Summary Information

Fig. 7



## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US01/29612

**A. CLASSIFICATION OF SUBJECT MATTER**

IPC(7) : G 06F 17/60

US CL : 705/36

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 705/36

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
EAST**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 6,134,536 A (SHEPHERD) 17 OCTOBER 2000, Abstract, Figs 1-82; col 3 lines 47-52; col 4 lines 4-37; col 7 lines 28-45; col 10 line 40-col 13 line 37; col 36 line 6-col 38 line 16; col 39 line 34-col 42 line 39; col 43 line 27-col 44 line 23; col 48 line 32-42; col 50 line 7-col 58 line 60	1-17
Y	US 6,078,904 A (REBANE) 20 JUNE 2000, Abstract; Figs 1-12; col 1 lines 20-52; col 1 line 54-col 4 line 35; col 4 lines 37-50; col 4 line 51-col 5 line 50; col 6 line 19-47; col 7 lines 1-42; col 8 lines 25-36; col 9 lines 20-55; col 9 line 57-col 11 line 43; col 11 line 45-col 13 line 46; col 14 line 20-col 15 line 53; col 17 lines 9-47; col 20 line 8-col 22 line 38; col 23 lines 28-43	1-17

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents	*T	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier document published on or after the international filing date	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Z"	document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means		
"P" document published prior to the international filing date but later than the priority date claimed		

Date of the actual completion of the international search

17 OCTOBER 2001

Date of mailing of the international search report

28 NOV 2001

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